

Cosmetic Surgical Procedures for the Aging Face

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In the past decade there has been a remarkable increase in the number of patients having cosmetic operations to achieve a more youthful appearance. Demographic, social and economic factors in our society have contributed to this phenomenon, along with an increase in the number of trained plastic surgeons. Moreover, there recently have been major technical advances in aesthetic surgical procedures, including innovations in anesthetic techniques. The newer procedures for forehead-plasty, blepharoplasty and face lift are based on improved understanding of the facial anatomy. The operations are more complex and extensive, but experience has shown that they can be done safely. Correction of the changes of facial aging has been enhanced and the duration of the result has been prolonged.

DURING THE PAST TEN YEARS, plastic surgeons have noted a remarkable increase in requests for operations to correct facial changes associated with aging. Among plastic surgeons, the 1970's have come to be referred to as the decade of the face lift. This paper reviews several factors, including technical advances, that have contributed to the increase in cosmetic facial operations.

Demographic Considerations

A "youth-oriented" culture began developing in the 1960's, perhaps starting with the election of John F. Kennedy. At his inauguration as President, Kennedy declared that a new generation of Americans, aware of its youth and vitality, had emerged at the forefront with him, prepared to manage the affairs of the country. His seductive appeal had a far-reaching impact.

The Kennedy years were followed in the late 1960's by a substantial demographic change in the United States, occurring as the post-World War II baby boom introduced a vast group of young

Americans into the social, political and business life of the country. Since that time, the communications media have steadily conveyed the message that to be young and healthy is to be able to compete and succeed.

Getting into and staying in shape, or at least having that appearance, has become a major obsession in our society. The resultant peer pressure has been felt by Americans of all ages. Concomitantly, advances in general health-care delivery and greater attention to improved nutrition and dietary habits, along with emphasis on exercise, have resulted in a general population that is stronger and feels younger. However, not all of us were young in the 1960's and 1970's, and the signs of facial aging that betray the passage of youth cannot be staved off by improved health care or exercise. For many people this aging appearance signals a loss of self-confidence and decreased ability to compete.

Before the 1970's, plastic surgical procedures to correct facial aging existed in a very narrow world. Face-lift and eyelid operations were mainly done on members of the highest echelons of society or of the theatrical profession, for whom it was considered appropriate for career purposes.

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Submitted April 23, 1981.

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ABBREVIATION USED IN TEXT

SMAS= superficial musculoaponeurotic system

There were comparatively few plastic surgeons and those surgeons who did a lot of aesthetic facial operations practiced mostly in the capitals of society and of the performing arts, specifically in New York City and Los Angeles. Most commonly, a rich person from an outlying area traveled to the plastic surgeons in New York or Los Angeles for facial cosmetic operations.

In the years after World War II, plastic surgery as a subspecialty came of age with rapidly increasing participation of plastic surgeons in medical school and postgraduate medical education. As plastic surgeons moved into the mainstream of academic surgery, a greater number of medical students interested in the surgical field were exposed to the multifaceted specialty of reconstructive and aesthetic surgery. The demand for training in plastic surgery brought about the development of residency training programs in nearly every major university medical school in the country and a number of private hospitals with academic orientation.

Approximately 100 new surgeons trained in plastic and reconstructive surgery become eligible for specialty certification in the United States each year. There are now about 2,500 plastic surgeons, either certified or eligible for certification by the American Board of Plastic Surgery, which represents nearly a fivefold increase since 1960. Most still practice in major metropolitan areas, but there are many well-trained, well-qualified plastic surgeons who are doing aesthetic surgical procedures in the smaller communities throughout the United States. This is particularly true in the state of California where there are more than 400 practicing plastic surgeons.

Another important factor contributing to the increase in aesthetic operations relates to the increasing affluence of our society. The past 20 years have seen the wealth of our nation provide discretionary income to a wide spectrum of the population that can now afford second automobiles, vacation homes, travel abroad and, with increasing frequency, aesthetic surgery. To the rich, socially prominent and show business patient groups, we have added middle-class housewives, professional women and, increasingly, business and professional men. The common factor that

links all of these groups of patients is that they wish to maintain a personal appearance that is consistent with the youthful and even athletic image that has become a basic social and professional factor in American life.

Advances in Anesthesia

Yet another consideration to be discussed are the technical advances that have occurred in the field of aesthetic surgery. These include important innovations in anesthesia techniques. It is of historical interest to observe certain traditional differences in the choice of anesthesia for facial aesthetic operations as practiced on the East and West Coasts. In New York City, the early center for aesthetic surgery, health insurance plans have included coverage for hospital care and anesthesia administration for cosmetic operations. Consequently, most New York patients and surgeons choose general anesthesia for aesthetic facial surgical procedures and patients customarily convalesce for several days in the hospital after the operation. In the West, health insurance policies have always excluded any benefits for cosmetic surgery and, furthermore, until recently hospital beds were in relatively short supply in the metropolitan areas of the West Coast. Face lifts and eyelid procedures were typically done on an outpatient or short-stay basis in a hospital or a private clinic. Of necessity, they were done under local anesthesia.

Before the 1970's local anesthesia for cosmetic operations of two to four hours' duration was often an uncomfortable experience. Preoperative sedation was administered with caution for fear of overdepressing the patient and was usually limited to medication given orally or by intramuscular injections. Narcotics such as morphine sulfate and meperidine hydrochloride (Demerol) often produce the uncomfortable and complicating side effects of nausea, with intraoperative or postoperative vomiting.

The introduction of diazepam (Valium) in the early 1970's revolutionized local anesthetic techniques for plastic surgery. Diazepam, administered in small doses intravenously in conjunction with incremental doses of narcotics such as meperidine or fentanyl citrate, produces a rapid sedation characterized by euphoria and drowsiness, often leading to a sleeping state from which a patient can be easily aroused by voice command. During this period of sedation, local anesthetic infiltration or nerve block can be done without disturbing the

patient. An additional benefit of diazepam is that of amnesia for the episode of surgery.

Respiratory depression is much less frequent with diazepam than with barbiturates. The combined administration intravenously of diazepam with small doses of narcotic allows a patient to have an operation with local anesthesia of three to four hours' duration with complete relaxation and comfort and then to recover with little or no memory of the event. Patients contemplating a cosmetic surgical procedure with local anesthesia can be reassured that "they will be asleep" when, in fact, they will not be deeply anesthetized.

Certain tranquilizers such as prochlorperazine (Compazine) or droperidol (Inapsine) can be used to suppress narcotic-induced nausea and vomiting. For that matter, the newer synthetic narcotics such as fentanyl rarely cause patients to become nauseated. Compazine or, in selected cases, chlorpromazine hydrochloride (Thorazine),¹ may be used intraoperatively to control transient labile hypertension, which is a problem in patients undergoing a facial surgical procedure. Controlling hypertension and vomiting greatly diminishes intraoperative bleeding and the possibility of post-operative hematoma or prolonged ecchymosis.

Facial Aesthetic Surgical Procedures

At the annual meeting of the American Society of Plastic and Reconstructive Surgeons in 1976, it was stated that facial aesthetic surgical techniques had been almost completely revolutionized in the preceding ten years.² Plastic surgeons throughout the country are using procedures that were developed in the 1970's. These operations for the most part result from detailed analysis and understanding of eyelid and facial anatomy and the changes that occur with aging. The newer procedures are more extensive and sophisticated but experience has proved that they can be done with a high degree of safety and will provide improved and longer lasting results.

Forehead-plasty

Until recently, forehead *lifts* were not favorably regarded by plastic surgeons in the United States and were seldom done. Direct brow lift by local forehead skin excision has been commonly done when warranted but has the disadvantage of leaving visible scars in the brow and temple.³ Disinterest in the forehead-lift operation was probably related to misconceptions regarding the functional anatomy of the forehead brow region and inade-

quate surgical approaches to the problems of this area.

Along with the face and neck, the forehead tissues lose elasticity, elongate and sag with advancing age. In the forehead this drooping is most noticeable in the brow and glabellar regions, where drooping eyebrows impinge on the orbit and reduce the dimension of the orbital-eyelid space. In an attempt to lift the drooping brows and upper eyelid, a contracture of the frontalis muscle in the forehead often develops that results in transverse wrinkling of the forehead, eventually leaving deep lines. Glabellar frown lines are etched by the chronic squinting process associated with reading at work or as a reaction to bright sunlight when out of doors.

In the past, a forehead-lift operation was done primarily to eradicate the transverse forehead lines. The technique was directed to increasing vertical skin tension with frontal scalp excisions, which often produced excessive elevation of the anterior hairline, wide scars, occasional hair loss and frequently excessive elevation of the eyebrows, creating a surprised expression.⁴ Early recurrence of the transverse lines was common and thus the forehead-plasty fell into disrepute.

American plastic surgeons are indebted to Kaye⁵ for clarifying the anatomic problems of the forehead and describing a more appropriate operation for correction of forehead relaxation. The present-day forehead-lift procedure is specifically directed to elevating drooping eyebrows. To accomplish this, it is now recognized that the most important factor in the operation is to completely free dense fascial attachments between the skin of the brow region and the superior orbital rim and frontonasal area so that the brows can be elevated without skin tension. Glabellar frown lines are diminished by appropriate resection of the corrugator muscles and occasionally by incising the subcutaneous tissue adjacent to the frown lines from the deep aspect of the forehead flap, which smooths the glabellar skin by appropriate lateral tension on the elevated forehead flap. An additional important part of the operation is the segmental resection of a portion of the frontalis muscle, which reduces tension in the flap, allowing the brow to be raised with less skin resection required so that the frontal hairline is not elevated excessively. Dividing the frontalis muscle and correcting the brow and upper lid overhang minimizes the tendency for recurrence of the deep transverse wrinkles.

In the past four years I have included a forehead-plasty in almost a third of the operations done for correction of changes due to facial aging. Using this approach for forehead lift has resulted in a high degree of satisfaction to patients, who have expressed pleasure regarding the results in this area particularly. The maintenance of this correction is comparable with that of the face and the neck.

Blepharoplasty

Cosmetic blepharoplasty is the most popular and frequently done procedure for improvement of facial aging problems. It is the cosmetic operation most commonly done in men though face lifts in men are being done with increasing frequency. Complementary blepharoplasty is done in approximately 70 percent of the patients who have a face lift.

Blepharoplasties were originally done by ophthalmologists primarily to eliminate grossly excessive upper eyelid skin that produced obstruction to vision by lateral hooding over the lid margins. Aesthetic correction of additional deformities underlying the skin, including redundancy of muscle and fat, was suggested by plastic surgeons who recognized the contribution of these tissues to the aging appearance of the eyelids. Bames⁶ of Los Angeles called attention to the protrusion of orbital fat into the eyelids which produces the baggy-eyelid appearance. His colleague and associate, Castanares,⁷ published a detailed anatomical study of the orbital fat pads and their contribution to eyelid deformities. After many contributions to the technique of cosmetic blepharoplasty, Dr. Castanares has come to be regarded as the originator of modern cosmetic eyelid operations.

More recently, the importance of selective resection of redundant portions of the orbicularis muscle has been emphasized.^{8,9} Owsley first reported in 1980 that the presence of a submuscular fat pad in the upper eyelid overlying the lateral orbital rim contributes to the bulky lateral hooding appearance.¹⁰ Resection of this fat pad, along with an overlying strip of orbicularis muscle, has enhanced the correction of such deformities.

In certain patients, predominantly Orientals, there is a minimal attachment of the pretarsal skin of the upper lid to the underlying orbicularis muscle and tarsus, which leaves the skin loose and without a well-defined palpebral crease.¹¹ To create a well-defined crease and fold (that is, a

westernized eyelid), suture fixation between the skin and the supratarsal orbital septum has proved effective. Various technical variations of the procedure have been described.¹²⁻¹⁵ Modern cosmetic blepharoplasty has become complex and time-consuming. Such operations require detailed knowledge of anatomy and painstaking attention to technique. The advantage of these procedures is the improved and longer lasting correction of the aging appearance of the eyelids.

Face Lift

The face-lift operation has undergone perhaps the greatest transformation of any of the facial cosmetic procedures. The so-called classical face-lift operation that originated in Europe in the early part of the century involves the separation of the skin of the face and neck from the superficial subcutaneous tissues with incisions that begin in the temporal scalp, encircle the ear and extend into the cervical and occipital hair-bearing regions. Variations in location of incision, extent of skin undermining and pattern of resection of the superiorly advanced skin redundancy are numerous.¹⁶ But until recently little or no attention was paid to the direct correction of deformities of the structures underlying the skin that also become lax and contribute to the aging changes of the face and neck.

The newer face-lift operations have increasingly focused on the deeper tissues. Improved contouring of the submental and submandibular regions of the neck was advocated in the early 1970's by Millard,¹⁷ who directly excised fat in these areas through the lateral cervical approach, combined with a separate submental incision. Connell¹⁸ and Peterson¹⁹ have shown that such defatting can accomplish a dramatic improvement in selected patients that cannot be achieved by a rhytidoplasty alone.

Skoog²⁰ in 1974 described an important aspect of the anatomy of the lower face and neck, pointing out that the skin and subcutaneous fat of the lower face and neck form a morphologic entity with the platysma muscle. These three layers are intimately connected with multiple fibrous septa. With aging, the skin, subcutaneous tissue and platysma muscle shift downward and together are responsible for the sagging appearance often shown by prominent cords of the platysma muscle in the anterior submental and neck region.

In 1976 Mitz and Peyronie²¹ described the

superficial fascia of the prepatotid and cheek area, which they termed the superficial musculo-aponeurotic system (SMAS). With cadaver dissection they showed that the SMAS in the pretragal region is in continuity with the lateral end of the frontalis muscle in the upper part of the face and with the platysma muscle in the lower face and neck. Fibrous septa extend from the SMAS to the dermis through the subcutaneous fat, creating a wide mesh of connections between the skin of the cheek and the underlying SMAS. Mitz and Peyronie observed that surgical undermining at the superficial subcutaneous plane as is done in the classic face-lift procedure destroys these fibrous connections between the SMAS and skin. Consequently, a rhytidoplasty alone does not correct the laxity of these deeper tissues that sag with the skin.

While the SMAS and platysma are interconnected with the skin and subcutaneous tissue, the undersurface of this anatomic flap is not intimately fixed to the deeper structures. A potentially avascular space is present between the superficial flap and the external layer of the deep cervical fascia of the neck, which continues into the cheek as the true parotid fascia. Because of this anatomic configuration, the SMAS-platysma layer is easily separated from the deep cervical fascia. Almost no vessels cross this plane, but care is necessary when dissecting to identify and avoid damaging those major vessels and nerves that course just beneath the surface of the deep cervical fascia.

Incorporating the anatomic descriptions of Mitz and Peyronie with the technique of subplatysmal dissection originally advocated by Skoog, Owsley devised the technique of SMAS-platysma face lift in which the redundant tissue of the cheek, jaw line and neck are lifted by freeing and upward advancement of the compound flap comprising the interconnected skin and SMAS-platysma layer.²²⁻²⁴

Extensive experience with this technique in a large series of patients has shown several advantages of the SMAS-platysma face-lift operation.

- Minimal superficial undermining of the skin in the subcutaneous plane prevents the vascular compromise of the skin flaps that results from severing the superficial blood supply to the skin.

- Undermining in the avascular plane beneath the musculoaponeurotic layer reduces the number of blood vessels encountered and has decreased

the occurrence of extensive ecchymosis and post-operative expanding hematoma.

- Superior lateral advancement of the SMAS-platysma-skin flap effectively tightens the submental and mandibular regions in a snug and longer lasting lift than with the skin lift alone.

- Complete transection of the platysma muscle across the base of the skin-platysma flap below the level of the cervicomental angle has improved the correction of prominent anterior neck cords. The muscle transection has prevented their early recurrence which has been a significant problem in patients who had a facial rhytidectomy.

- The skin flap in the upper cheek and temple area can be undermined widely superficially to the SMAS flap, with tension directed laterally to enhance correction of deep nasolabial folds.

- As lateral tension in the neck is created by sutures in the platysma flap, it is possible to place the postauricular incisions higher into the hairline to prevent visibility of this scar without compromising the degree of lower neck skin correction.

- There is less stretching of the skin with a more natural appearance, in contrast to the "pulled appearance" sometimes observed following a tight facial rhytidectomy.

- Healing of the skin incisions is accelerated because there is less tension and vascular embarrassment of the skin edges.

The most significant potential disadvantage of the technique is that of possible injury to the branches of the facial nerve. Analysis of 322 consecutive cases of platysma-SMAS facial rhytidectomies over a four-year period indicated that nine patients had a temporary decrease in function of the platysma muscle, characterized by diminished depressor activity of the chin.²³ This was related to dysfunction of either the cervical branch of the facial nerve or the platysma muscle due to transection.²⁵ The temporary deformity was minimal, however, and the patients recovered full function within three months. There were no instances of injury to the marginal mandibular, buccal or frontal branches of the facial nerve. The frequency of nerve injury with the SMAS-platysma operation is comparable to that published in other series in which the classical face-lift procedure was done.²⁶ The incidence of other complications, including extensive ecchymosis, expanding hematoma and skin slough in this series, was somewhat

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less than reported in patients in whom the classical facial rhytidectomy was done.²⁷

Six Representative Cases

CASE 1. A 43-year-old man, an optometrist, was seen with pronounced bagginess of the upper and lower eyelids due to prominence of the orbital fat pads. A blepharoplasty procedure was done that included removal of excess skin, orbicu-

laris muscle and fat, including a prominent lateral fat pad in the upper lids. Medial, central and lateral fat pads were removed from the lower lids, followed by excision of the lax excess skin (Figure 1).

CASE 2. A 51-year-old male business executive had heaviness of the upper eyelids and baggy and wrinkled lower eyelids. A blepharoplasty was done that included removal of skin, orbicularis



Figure 1.—Preoperative (left) and one-year postoperative (right) appearance of 43-year-old man following upper and lower blepharoplasty.



Figure 2.—Preoperative (left) and one-year postoperative (right) appearance of 51-year-old man after upper and lower blepharoplasty.

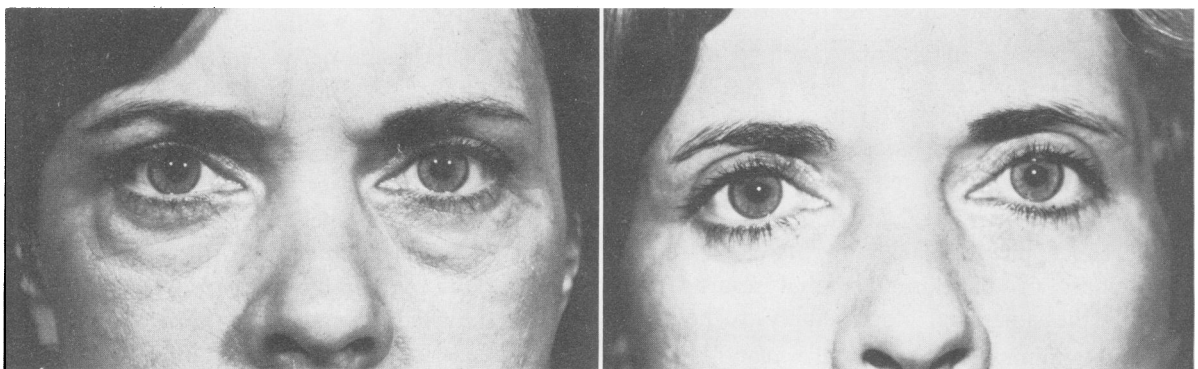


Figure 3.—Preoperative (left) and two-year postoperative (right) appearance of 41-year-old woman after upper and lower blepharoplasty.

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muscle and fat pads of the upper lid. The skin of the lower lids was undermined widely from the underlying orbicularis muscle to allow redraping after excision of excess skin that followed removal of redundant fat pad (Figure 2).

CASE 3. A 41-year-old housewife had been bothered by baggy lower eyelids since her early 20's. The baggy appearance of her lower lids was typical for her family, being notable in her father and brother. A lower-lid blepharoplasty was done that included removal of prominent fat pads and

excess skin of the lower lids. An upper-lid blepharoplasty was also done (Figure 3).

CASE 4. A 45-year-old female executive was seen for correction of the aging appearance of her face. Examination of her face showed laxity of the skin of the cheek and neck, with notable jowl formation and moderately prominent anterior neck cords. The upper eyelids showed folding of excess skin on the eyelashes with moderate protrusion of fat of the lower eyelids. Upper- and lower-lid blepharoplasties were done in conjunc-

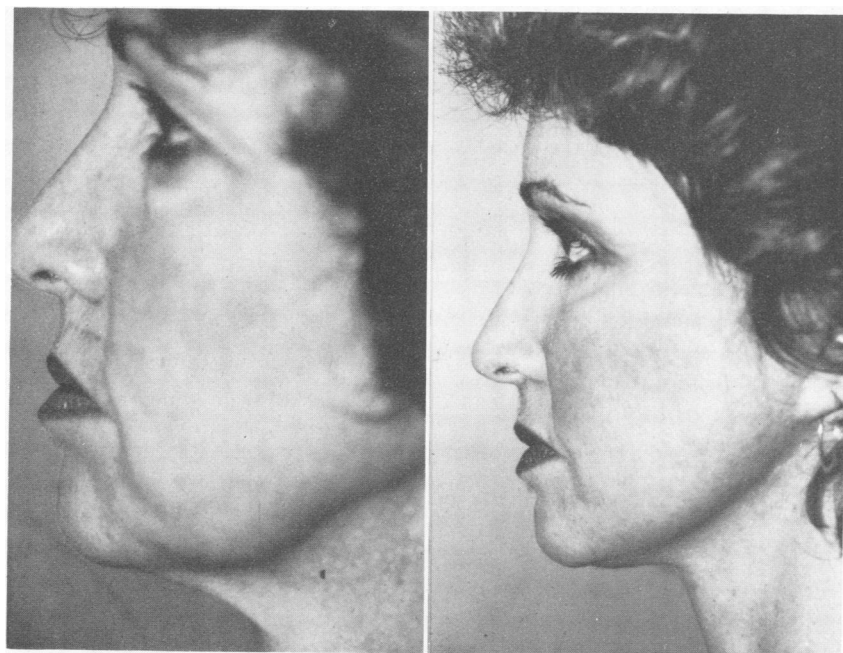


Figure 4.—Preoperative (left) and one-year postoperative (right) appearance of 45-year-old woman after SMAS-platysma face lift and upper and lower blepharoplasties.

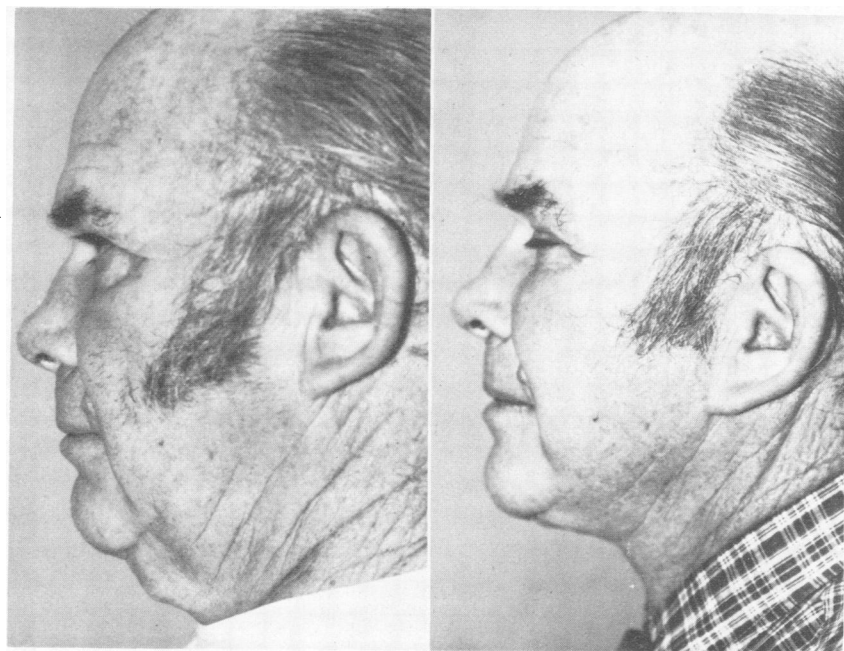


Figure 5.—Preoperative (left) and six-month postoperative (right) appearance of 71-year-old man after SMAS-platysma face lift with submental and submandibular defatting of the neck.



Figure 6.—Preoperative (left) and six-month postoperative (right) appearance of 61-year-old woman after coronal forehead brow lift, upper and lower blepharoplasties and SMAS-platysma face lift.

tion with an SMAS-platysma face lift. Neck defatting was not required (Figure 4).

CASE 5. A 71-year-old practicing dentist presented with considerable laxity of the skin of the face and neck, showing a pronounced "turkey gobbler" deformity of the anterior neck with bulky fat deposits in the submental and submandibular regions. An SMAS-platysma facial rhytidectomy in conjunction with submental and submandibular defatting of the neck was done that included an additional submental incision (Figure 5).

CASE 6. A 61-year-old housewife was seen because of the severely aged appearance of her face and neck. There was pronounced laxity and wrinkling of the skin characteristic of many years of sun exposure. The forehead showed transverse wrinkling associated with drooping brows, heavy upper eyelids and glabellar frown lines. The skin of the lower eyelids was lax and wrinkled. A one-stage surgical correction was done that included coronal forehead brow lift, upper- and lower-lid blepharoplasties and SMAS-platysma facial rhytidectomy (Figure 6).

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